

WHAT IS CLAIMED IS:

1. A device for etching at least one of a substrate and a silicon body using an inductively coupled plasma, the device comprising:

an ICP source for generating a high-frequency electromagnetic alternating field;

a reactor for generating the inductively coupled plasma composed of reactive particles by an action of the high-frequency electromagnetic alternating field on a reactive gas; and

an arrangement for generating one of a static magnetic field and a time-variable magnetic field between the ICP source and the at least one of the substrate and the silicon body, the arrangement having at least two magnetic field coils arranged one above the other.

2. The device of claim 1, wherein the at least two magnetic field coils surround the reactor in at least some areas between the ICP source and the at least one of the substrate and the silicon body.

3. The device of claim 2, wherein a wall of the reactor is formed at least in some areas by at least one spacer associated with the at least two magnetic field coils.

4. The device of claim 1, wherein at least one component magnetic field generated by the at least two magnetic field coils is at least one of variable over time and pulsable by a power supply unit.

5. The device of claim 1, wherein electric currents flow through at least two of the at least two magnetic field coils in opposite directions.

6. The device of claim 1, wherein at least one of the static magnetic field, the time-variable magnetic field, a periodically variable magnetic field, and a pulsed magnetic field whose direction is at least approximately parallel to a direction defined by a tie line connecting the at least one of the substrate and the silicon body and the inductively coupled plasma is generatable using the at least two magnetic field coils.

7. The device of claim 1, wherein the at least one of the substrate and the silicon body is arrangeable symmetrically between the at least two magnetic field coils.

8. The device of claim 1, wherein the at least one of the substrate and the silicon body is arrangeable in one of a lower area and an output area of one of the at least two magnetic field coils facing away from the inductively coupled plasma, and within a space defined by another one of the at least two magnetic field coils.

9. The device of claim 8, wherein a substrate electrode is connected to the at least one of the substrate and the silicon body, which is arrangeable so that it is exposed to a component magnetic field of the one of the at least two magnetic field coils facing away from the inductively coupled plasma.

10. A method for etching at least one of a substrate and a silicon body using an inductively coupled plasma generated by a device, the device including an ICP source for generating a high-frequency electromagnetic alternating field, a reactor for generating the inductively coupled plasma composed of reactive particles by an action of the high-frequency

0007-4222-3000

electromagnetic alternating field on a reactive gas, and an arrangement for generating one of a static magnetic field and a time-variable magnetic field between the ICP source and the at least one of the substrate and the silicon body, the arrangement having at least two magnetic field coils arranged one above the other, wherein at least one of the static magnetic field, the time-variable magnetic field, and a pulsed magnetic field whose direction is at least approximately parallel to a direction defined by a tie line connecting the at least one of the substrate and the silicon body and the inductively coupled plasma is generatable using the at least two magnetic field coils, the method comprising the steps of:

generating a first component magnetic field using a first magnetic field coil of the at least two magnetic field coils; and

generating a second component magnetic field using a second magnetic field coil of the at least two magnetic field coils;

wherein the first component magnetic field and the second component magnetic field are oriented in opposite directions from one another.

11. The method of claim 10, wherein the first component magnetic field and the second component magnetic field have a same amplitude of a field intensity at an equivalent site.

12. The method of claim 10, wherein the first component magnetic field and the second component magnetic field are each generated with a field strength amplitude in a range of between 1 milli-Tesla and 100 milli-Tesla in an interior of the reactor.

13. The method of claim 10, wherein the first component magnetic field and the second component magnetic field are each generated with a field strength amplitude in a range of between 10 milli-Tesla and 100 milli-Tesla in an interior of the reactor and in a vicinity of a reactor wall.

14. The method of claim 10, wherein at least one of the first component magnetic field and the second component magnetic field is generated as a pulsed component magnetic field by using at least one power supply unit.

15. The method of claim 14, wherein at least one of the first component magnetic field and the second component magnetic field are pulsed at a frequency of 10 Hz to 20 kHz to establish a pulse/pause ratio of 1:1 to 1:100.

16. The method of claim 14, wherein a pulsing is one of correlated in time and synchronized with at least one of a first pulsing of an input plasma power and a second pulsing of a high-frequency power injectable into the at least one of the substrate and the silicon body by a substrate voltage generator.

17. The method of claim 10, further comprising the step of pulsing the first component magnetic field and the second component magnetic field simultaneously and synchronously with one another, the pulsing occurring synchronously with a high-frequency power injected into the at least one of the substrate and the silicon body.

18. The method of claim 12, wherein the range is between 1 milli-Tesla and 5 milli-Tesla.

19. The method of claim 13, wherein the range is between 10

milli-Tesla and 30 milli-Tesla.

20. A device for etching at least one of a substrate and a silicon body using an inductively coupled plasma, the device comprising:

means for generating a high-frequency electromagnetic alternating field;

means for generating the inductively coupled plasma composed of reactive particles by an action of the high-frequency electromagnetic alternating field on a reactive gas; and

means for generating one of a static magnetic field and a time-variable magnetic field between the means for generating and the at least one of the substrate and the silicon body by using at least two magnetic field coils arranged one above the other.